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The effects of product innovation on capital asset growth: preliminary results for a six- country survey in peripheral areas of the European Union

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Presentation outline

- Importance of research
- Definitions
- Case study areas
- Data and Methodology
- Results
- Conclusions

Importance of research

- Investment is necessary to support innovation
- Investment is a necessary precondition to business growth and thus employment creation in rural and peripheral areas.

Objective

- Explore the effects of product innovation on capital asset growth in a sample of 600 firms coming from rural and peripheral areas of six European Countries

Definitions

Innovation

- In this paper use of a “soft” direct measure of innovative activity and that is the introduction of innovations (the same measure- introduction of a new product- is used by Acs & Audretsch-1987,1988,1990, Scherer-1983, Mansfield-1984 etc)

Peripherality

“the condition experienced by individuals, firms and regions at the edge of a communication system, where they are away from the core or controlling center of the economy” (Goodall, 1987)

Definitions

Peripheral areas: low innovation potential & technological dynamism, not providing a supportive innovative milieu, lack highly skilled labour or risk/investment capital, SMEs face many problems to overcome distance

On the other hand: natural beauty & quality of life as a key factor, remote & accessible rural firms attribute rising income, accessible rural firms are more innovative than their remote rural & urban counterparts.

Definitions

Investment

- According to Bond & Jenkinson (1996) investment concerns the creation of capital, which can be fixed or tangible, like machinery or plants, intangible, like technical knowledge, or human, which includes education and skills required.
- Bond et al (2003) report that investment in intangible capital tends to be riskier than investment in fixed capital and this is why it faces financial constraints.

Definitions

Investment & Innovation

- Afuah (1998) distinguishes between (i) the uncertainty problem, (ii) the ex-ante and (iii) the ex-post information asymmetry problem.
- The manager or the entrepreneur faced with the uncertainty problem has to determine whether or not it is worth undertaking an innovation, considering the expected cash flows and outlays, a process, which is not always easy.
- As far as asymmetric information is concerned, the ex-ante problem deals with the possible obstacles occurring before the financing is obtained, while the ex-post deals with problems arising after the financing has been obtained (Afuah, 1998).

Case study areas

- **Finland**- Keski-Suomi and Satakunta
- **Germany**- Rottal-Inn and Bitburg-Prüm
- **Greece**- Evrytania and Kalavryta
- **Ireland**- Wexford and Clare
- **UK**- Northern Isles and East Ayrshire
- **Spain**- L'Alcoia and El Camp de Morvedre

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Data and Methodology

600 businesses of which

100 in each country

50 in each area

25 in service sector & 25 in manufacturing

Personal interviews conducted

600 fully completed and usable questionnaires

Estimated model: logit

Variable Name	**Definition**
Dependent Variables	
PERINV	Dummy variable, 0= Firm reports negative or no change in total assets in the last 5 years, 1=Firm reports positive change
Independent Variables	
INNOVFIR	Dummy variable, 1=Firm claims a new to the firm product, 0=Firm does not claim a new to the firm product
PIR	Percentage of investment/capital raised from within the region
ACCESSNA	National Peripherality Index
LABSIZE	The firm's size in terms of AWU
LABSIZE2	The firm's size squared
FIRMAGE	Firm's age in years
HUMCAP3	Dummy variable, 1=Entrepreneur worked in another business in the area, 0=Otherwise
SECTORS	Dummy variable: Firm's sector, 1= All other, 2= services
TRAININ	Dummy variable, 1=Training undertaken, 2= otherwise

Results- Coefficient estimates of logit model

Independent Variables	Coefficient Estimates		Marginal Effects	
	Coefficient	t-value	Coefficient	t-value
Constant	1,696	1,942*	0,379	1,931*
INNOVFIR	-0,487	-1,978**	-0,109	-1,979**
PIR	-0,008	-2,910***	-0,002	-2,918***
ACCESSNA	-0,010	-1,505	-0,002	-1,505
LABSIZE	0,019	2,739***	0,004	2,744***
LABSIZE2	-0,001	-2,216**	-0,00001	-2,220**
FIRMAGE	-0,010	-1,955*	-0,002	-1,956*
HUMCAP3	0,369	1,758*	0,082	1,759*
SECTORS	-0,088	-0,404	-0,020	-0,404
TRAININ	-0,399	-1,824*	-0,089	-1,827*
FINLAND	-0,758	-2,085**	-0,169	-2,088**
GERMANY	-1,760	-3,532***	-0,393	-3,585***
GREECE	-0,105	-0,249	-0,023	-0,249
IRELAND	-0,496	-1,391	-0,111	-1,392
UK	1,016	2,459**	0,227	2,450**

ρ^2 = 0,118/ 70,2% correct predictions/ sample size= 510 /
*** significance at the 10% level,** at the 5% *** at the 1%**

Conclusions

- the introduction of new products is inversely related to capital asset growth

  Himmelberg & Petersen (1994) and Smolny (2003): necessity of small firm innovation to be financed internally due to asymmetry of information/ reluctance or skepticism of commercial banks to provide firms with the funds requested/ higher intermediation costs that raise the cost of capital and make their selection defective (OECD, 1995). Because of the financial constraints that small firm owners or managers may face in rural areas, the more dynamic ones, who devote their efforts to innovate, have fewer resources to invest. The effort to innovate locks firms in inferior technologies of production (due to lack of investments in technology) or in lower production scale levels (due to lack of investments to increase the scale of production).
- Concerning the firm's size in AWU, the probability to invest increases with a firm's size up to a certain point, which is 140 employees (in AWU) and then decreases. This result indicates that smaller firms, which are also more likely to be resource constrained, carry out investments. So, if we assume that innovation employs resources, then for small innovative firms it will be more difficult to invest.

Conclusions

- Lundvall and Johnson (1994) report that formal human capital accumulation processes, such as education and training stimulate knowledge, creativity, skills, motivation and the ability to provide problem solving. However, training in our study does not seem to have a positive effect on investment. On the other hand, informal processes of human capital accumulation, like previous working experience in another firm increases the probability that the firm has invested. As Chandler and Hanks (1991) *cited in Skuras et al (2005)* report experience in a similar position may not provide the entrepreneur with the advantages of having run another business before, but it does provide him or her with better knowledge of products, production factors and methods, customer and supplier relations and the ability to evaluate and manage risk.
- Finally, concerning country dummies, the ones that are statistically significant are Finland, Germany and the UK. Moreover, when we examine the probability that the firm has increased its capital assets in the last 5 years in relation to the country that the firm belongs, the UK presents the higher probability both for innovative and non-innovative firms. Moreover, the innovative firms present less probability for investment than the non-innovative and this is the case for all countries.

END OF PRESENTATION

COMMENTS AND RECOMMENDATIONS ARE WELCOME!!